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Studying the Social Impact of the Texas Shrimp Closure

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This is a case study in "real-world" social science applications in fisheries management. It is also meant as a kind of delayed follow-up to Paredes' account (1985) of his experiences on the Scientific and Statistical Committee (SSC) of the Gulf of Mexico Fisheries Management Council (GMFMC). The essay is, in addition, part of a continuing dialogue on the GMFMC SSC.

An earlier version of this essay was submitted in 1988 for the old "Government and Industry" section of *Human Organization*.

but was rejected. That paper was an account of what actually happened in the effort to inject some social impact assessment into the ongoing monitoring of a fishery management measure. Reviewers, however, saw it as a failed attempt at some idealized, more sophisticated analysis of fishermen's responses to the Texas shrimp closure. In a response to the editor, Paredes wrote:

The title of the paper is *not* "A Study of the Social Impact of the Texas Shrimp closure" but, instead, is "Studying the Social Impact of the Texas Shrimp Closure." . . . This is a case study in what happened in trying to meet the need for social and cultural information in the management of a fishery. The data summaries which followed [sic] are precisely the ones which were presented to the Management Council and their advisory committees to be taken into account along with economic and biological data in evaluating the effectiveness of the closure. This is the real stuff of "government and industry" . . . not social science make-believe, no matter how much we (including myself) might wish it were otherwise.

Although invited to resubmit the paper making clearer the points contained in Paredes' letter and deleting some of the data summaries (particularly figures), we were diverted by other projects and did not revise the paper.

We were inspired to rework and resubmit the essay recently when Paredes served as a referee for Christopher Dyer's commentary published in this issue of *Human Organization*. Dyer offered his paper as "an update of Paredes' (1985) article" and described a purported "shift in management structure and priority in the Gulf of Mexico Fishery Management Council . . . an attempt to more effectively integrate social and economic considerations into the management process."

Although Dyer's original paper had much to recommend it, his analysis appeared to suffer from lack of awareness of the critical events surrounding attempts to assess the social impact of the Texas closure, events that took place in the transition from Paredes' ten-year tenure on the SSC, ending in Spring 1988, to that of his successor, anthropologist J. Stephen Thomas of the University of South Alabama. In retrospect, after reading Dyer's account, those efforts to collect social data on the Texas closure would appear to have been a benchmark in the evolution of social science issues in the Gulf of Mexico Fishery Management Council, a foundation of which Dyer was apparently unaware. Dyer's essay, we proposed, would benefit from the information contained in our earlier, unpublished paper describing efforts to incorporate social data into the Texas closure monitoring process, and, published together, Dyer's paper and ours would make a useful pair of reports documenting the further unfolding of applied social science in the SSC of the GMFMC, first described by Paredes in 1985. Editor Angrosino agreed.

Background

The Gulf of Mexico Fishery Management Council is one of eight such councils established under the federal fisheries conservation and management act of 1976. One of the most decisive management measures adopted by the Gulf Council was an annual, early summer closure of several weeks' duration of the shrimp fishery in federal waters off the coast of Texas; this action was designed to coincide with a longstanding closure of state waters. The federal closure has been in effect since 1981, but the size of the area closed was reduced from 200 miles to

15 miles in 1986. The objectives of the closure were: to increase the yield of brown shrimp (*Panacus aztecus*); to eliminate the waste caused by the discard of undersized shrimp caught during the period in their life cycle when rapidly growing, allowing the shrimp to reach larger size before harvesting; and to increase the economic value of the harvest, since large shrimp bring a higher price per pound than smaller ones.

During 1981 to 1989 the National Marine Fisheries Service (NMFS) monitored the biological and economic effects of the federal closure (Jones, Klima, and Poffenberger, 1982; Klima et al. 1987; Nance et al. 1988, 1989). But the social impacts of the closure and fishermen's attitudes toward it did not begin to be systematically assessed until 1986, even though Leary (1985: 272) noted that following 1982, some south Texas fishermen, excluded from Mexican waters by then had "become embittered and now object to the management measure because they are idle during the closure." Paredes (1985:180) has described his early efforts as an SSC member to have the social effects of the closure examined.

At its January 1986 meeting, the Gulf Council acted on the recommendations of the SSC and other advisory bodies by directing NMFS to gather social as well as economic and biological data on the 1986 closure. Dr. Edward Klima, director of NMFS's Galveston Laboratory, contacted Paredes, who in turn consulted with fellow SSC member Thomas Panko, a sociologist at the University of Southern Mississippi. Klima, Paredes, and Panko developed a very brief set of "social questions" to be appended to the interview schedule used by NMFS port agents in collecting biological and economic data on the closure. At this point Nance, a NMFS fisheries biologist in Galveston, was assigned to work on the project. He consulted with Paredes by telephone to refine the questions and obtain advice on orienting the port agents in the use of the interview schedule. Nance then assumed responsibility for the project, directing data collection and, in consultation with Paredes, analyzed the data for presentation to the Gulf Council and its advisory committees at their January 1987 meetings.

The social data-gathering effort was repeated for the 1987 closure. NMFS port agents again collected social and attitudinal data from offshore shrimp fishermen using an interview instrument that built upon and further refined the previous year's effort, Nance again conferring with Paredes by telephone in the modifications of the instrument.

Moreover, in 1987 the Galveston Laboratory of NMFS conducted a social and economic survey of inshore shrimp fishermen along Galveston Bay, Texas, and Calcasieu Lake, Louisiana, to collect demographic data on the fishermen and their perceptions of the closure. The inshore study was funded by the NMFS-administered program "Marine Fisheries Initiative" (MARFIN). The Laboratory employed Nina Garfield, then a graduate student in coastal resources management at the University of Rhode Island, to conduct the social survey of the inshore shrimp fishery. She worked closely with Nance throughout the project; Paredes consulted with Garfield by telephone and mail and was in the field with Nance and Garfield for several days in July 1987.

Here we present very brief summaries, without figures, of results of the offshore and inshore surveys to convey the gist of information as presented verbally, visually, and in written form to fishery managers and their advisory committees in 1987 and 1988. For more details, see Nance, Garfield, and Paredes (1988, 1989, 1991).

Offshore shrimp vessel captains were interviewed by NMFS agents in 13 port areas during the summers of 1986 and 1987. The selected port areas spanned the Gulf from Brownsville, Texas, to Key West, Florida. Interviews in each area were conducted with approximately the first 30 captains who agreed to be interviewed.

Questions in the 1986 survey covered number of years fishing for shrimp, work done during the closure, and attitudes toward the closure of federal waters off Texas. Questions in the 1987 survey were more sharply focussed and included questions on vessel type, ethnicity of captain, and perceptions of the purpose and other aspects of the closure. In the 1986 survey, 346 captains were interviewed. During 1987, only 277 vessel captains were interviewed.

Captains from Florida, Alabama, and lower Texas ports (Brownsville, Port Aransas, Port Isabel) were generally in favor of a closure of federal waters off Texas during 1986. Captains from Louisiana and upper Texas ports (Freeport, Galveston, and Sabine) were generally against the closure, while captains from Mississippi were noncommittal in their views on the Texas closure.

Most of the captains from non-Texas ports who favored a closure of federal waters off Texas did not state a preferred closure distance. Of the few who did, those from Florida wanted a 15-mile closure, while those from Alabama and Louisiana wanted a 200-mile closure. Most captains from Texas who wanted a closure did have an opinion about the distance of the closure off Texas; the majority of those from lower Texas wanted a 200-mile closure, while most of these captains from upper Texas wanted only a 15-mile closure.

When the 1986 closure responses were analyzed by number of years shrimp fishing, the greatest percentages (a majority) of captains in favor of the closure were among those who had been fishing 11 to 30 years, while the least number (a minority) in favor were among those who had been shrimp fishing ten years or less.

Opinions in 1987 about whether or not to have a federal closure were similar to those in 1986. Alabama and lower Texas ports had the most captains in favor of a closure, the Alabama captains generally favoring 15-mile closure but the majority of the lower Texas port captains favoring the 200-mile closure. Florida captains also showed a majority in favor of the closure, with a large percentage favoring a 200-mile closure. Mississippi captains were equally split with regard to opinions about the closure. As in 1986, most Louisiana and upper Texas captains were against the closure. Most of the small number in favor of the closure preferred the 15-mile closure.

In the 1987 survey, captains were asked what they thought was the purpose of the federal closure. Responses were summarized into four categories: 1) no opinion; 2) I don't know; 3) allow shrimp to grow larger; and 4) political, i.e., to some specific group's advantage. Overall, slightly more than half seemed to know that the avowed purpose of the Texas closure was to allow small brown shrimp to grow to a larger size before harvesting. Florida, Alabama, Mississippi, and lower Texas ports had a majority of responses in the "shrimp-growth" category. Answers from Louisiana were divided between shrimp growth and no opinion, while responses from upper Texas ports were roughly evenly divided between shrimp growth, I don't know, and political. The majority of those from upper Texas who had

no opinion or said that they did not know the reason for the closure were of Asian descent (mainly Vietnamese) — 31% of the upper Texas coast interviewees.

Overall, in 1987 39% of the captains Gulf-wide were against the closure, while 51% were in favor of it. Among those captains who understood the managerial objective of the closure, the proportion in favor of the closure was much greater.

When captains were categorized by the type of vessel, i.e., whether shrimp are preserved by ice purchased ashore or in an on-board freezer, captains of freezer boats were mostly in favor of the closure, most favoring a 200-mile closure. A great majority of the freezer boats were from the lower Texas coast. Captains of ice boats were almost equally split between favoring and opposing a closure; more of those favoring the closure preferred a 15-mile to a 200-mile closure.

When the 1987 responses were analyzed by number of years of commercial shrimp fishing, in contrast to 1986 roughly equal percentages of captains in each years-fishing cohort were in favor of the closure, but the proportions of outright negative responses increased directly in relation to number of years in the fishery.

Captains were asked what they thought was the biggest advantage and the biggest disadvantage of the closure. Most frequent answers about advantages were sorted into four categories: 1) no opinion; 2) better catches; 3) no advantage; and 4) better enforcement of management regulation. Most captains from Louisiana and upper Texas said there was no advantage to the closure. Perceived disadvantages of the closure comprised six major categories of responses: 1) no opinion; 2) "pulse" fishing, i.e., intensification of fishing effort immediately before and after closure; 3) too many out-of-state vessels in home state; 4) no disadvantage; 5) not making money because of closure; and 6) no enforcement of closure. Captains from Mississippi were split equally between no opinion and too many out-of-state vessels in their waters. Captains along the upper Texas coast most often responded that pulse fishing was a problem, while captains from Louisiana said that too many out-of-state vessels came to their state because of the closure. Captains along the lower Texas coast said enforcement was the worst problem, with statements about making less money because of closure being the next most frequent type of response.

We were surprised to find that in most ports, the effects of the 1985 and 1986 closures on employment were negligible to modest. Analysis of the employment data revealed that the percentage of captains who did not shrimp during the 1985 200-mile closure was high only in Florida and in Freeport, Port Aransas, and Brownsville, Texas. In Florida, 12% of the captains interviewed did not shrimp during the 1985 closure; the majority of them said they were unemployed. The percentage of Florida captains who did not shrimp during the 1986 closure dropped to only 4%. In Freeport, 29% of the captains did not shrimp during the 1985 closure, but 50% said they were employed at another job. Only 14% of captains said they did not shrimp during the 1986 closure. In Port Aransas, 29% of the captains interviewed did not shrimp during the 1985 closure, and most (90%) of them also said they were employed. During the 1986 closure the percentage that did not shrimp was reduced to 19%, but again most of these captains said they were employed. In Brownsville, Texas, 25% of the interviewed captains did not shrimp during the 1985 closure, but a little over half said they were employed at another job. This percentage was reduced to 11% during the 1986 closure, and again most said they were employed at another job.

The Inshore Study

Inshore shrimp captains from Galveston Bay, Texas, and Calcasieu Lake, Louisiana, were surveyed in the summer of 1987. A total of 150 interviewees were randomly selected from 1986 license lists of captains supplied by the Texas Parks and Wildlife Department and the Louisiana Department of Wildlife and Fisheries and represented captains of three pre-selected vessel size categories, i.e., boats less than 21 feet, boats between 21 and 40 feet, and boats greater than 40 feet.

Interviews were conducted with captains by telephone when possible. Questionnaires were mailed to those captains with unlisted numbers or without telephones. To supplement this effort, interviews were conducted at docks around the perimeter of each bay. Interpreters were used to interview non-English speaking members of ethnic populations, e.g., Vietnamese. In total, 159 responses from shrimp boat captains were obtained—89 from Galveston Bay and 70 from Calcasieu Lake.

Most of the inshore shrimpers surveyed did not express an opinion on whether or not there should be a Texas closure. Among the Calcasieu Lake shrimpers, 75% expressed no opinion; most of the remainder disapproved of the closure. The Galveston Bay shrimpers more frequently expressed an opinion, but 55% had no opinion regarding the closure; the remainder were almost equally divided between favoring and disfavoring the closure.

In neither area were there many who reported impacts of the closure directly on themselves. Only 30% of Galveston Bay and 20% of Calcasieu Lake respondents reported being personally affected by the closure. Responses indicate that such impacts varied in relation to vessel size.

Some Louisiana inshore shrimpers in all vessel-size categories indicated that their work was affected by the closure because it displaced Texas boats into Louisiana, causing crowding, reduced catches, and other problems. Some of the owners of large boats reported reduced income as a result of the Texas closure, but one captain of a large boat commented that during the Texas closure there was a price increase for shrimp in Louisiana, thus having a positive effect on his income.

The captains of larger Texas inshore boats reporting personal effects of the closure gave several kinds of responses. Many said they went to shrimp in Louisiana waters because it was too dangerous and costly for them to fish beyond the 15-mile limit of the 1987 Texas closure. Others said they shrimped inside Galveston Bay, which remained open during the closure, but experienced a reduction in income anyway because the bay was overcrowded. Finally, some complained about a drop in the price of shrimp just before the end of the closure period. The captains of medium-sized Galveston boats similarly complained of overcrowding in the bay during the closure and a decrease in the price of shrimp coinciding with the end of the closure.

Summary

Shrimpers' opinions about the closure differed considerably in relation to geographic areas, ethnicity and vessel type. One of the clearest findings was that the closure was negatively perceived by offshore shrimpers in the border area between Texas and Louisiana, but was supported strongly in south Texas where there are many freezer boats. In the first instance, the closure appears to have exacerbated inter-state competition. In the latter

case the closure gave a perceived competitive advantage to vessels that can harvest the larger shrimp in greater quantities once the closure ends.

Responses to the Social Research on the Closure

Simply doing this research appeared to have had some beneficial effects in the management process. The report on the 1986 social survey received considerable notice by managers and their advisory committees. Referring to the sometimes scatological, unexpurgated opinions reproduced verbatim in the 1986 write-up, the director of the Galveston lab joked, "This is the first X-rated report we've produced." Perhaps more telling than any other response is that a number of the members of the Scientific and Statistical Committee expressed surprise and dismay when it was reported to them in January 1988 that 40% of the interviewees in the 1987 study did not know the management objectives of the closure. On the other hand, some NMFS workers closer to the fishery found it encouraging that there were *only* 40% who did not know the purpose of the closure. Nonetheless, despite the long delay in beginning to assess the social impacts of the Texas closure, on January 13, 1988, following presentation of the annual NMFS review of the Texas closure, the SSC adopted a motion, introduced by a biologist, which appears in the minutes of the Gulf of Mexico Fishery Management Council, Standing SSC and Special Shrimp Committees, Tampa, Florida, January 13, 1988. Part of that motion, which appears on page 13, is as follows:

The Committee concurs with the analyses to date and that the objectives of the plan are being met; and that the Texas closure does increase yield in years of good recruitment [of juvenile shrimp]. Conversely, the Committee recognizes that in years of low recruitment, the closure has no detectable benefits . . .

The Committee also recognizes that the sociological studies conducted in 1986 and 1987 indicate that the adverse impacts or benefits of the closure may not be equally distributed among participants in the fishery. Therefore, the Committee recommends that these studies be continued. The Committee does not, however, see the benefit of continuing a detailed analysis of biological implications of the Texas closure.

Nonetheless, the Council at its own meeting that month decided to continue for the 1988 closure all three kinds of studies: biological, economic, and social.

Afterword

According to one fishery manager, in the following year (1988) the closure produced near-violent tensions in some Texas ports. Before the closure the US Coast Guard made public the information that enforcement of the closure would be limited because of budget reductions. Violations of the closure greatly increased during 1988 and resulted in friction between those shrimpers honoring the closure and those who were not, between processors willing to purchase all shrimp without any questions asked about where they were caught and those who were not.

The collection of "social data" on the 1988 closure continued. Neither Paredes nor Garfield, however, was involved in the 1988 effort. Moreover, questions asked by port agents in 1988 specifically addressed the problems of enforcement of a 15-mile closure as opposed to a 200-mile closure and were not compa-

rable to the questions asked in 1986 and 1987. Despite these differences, in 1989 the special Shrimp Scientific and Statistical Committee passed several motions addressing social issues surrounding the closure:

1. Recognized that a major problem is that many fishermen apparently do not understand the purpose of the Texas closure and do not abide by it or use it to their own advantage . . .
2. Studies should be conducted to identify social impacts of the Texas closure and include distribution of the economic benefits, i.e., who wins and who loses.
3. The committee recommends that the Shrimp SSC be augmented by the addition of economists and sociologists. (Several individuals were suggested.)

Notwithstanding these recommendations, at its own January 1989 meeting the Council itself voted to reinstate the 200-mile closure in its entirety during the 1989 season, a policy which continues to the present (1993). The next year, in January 1990, the full, standing SSC itself voted no longer to meet to hear the results of the annual Texas closure monitoring, being satisfied with findings to date. Since that time the NMFS Texas closure report to the Council itself has been greatly reduced and presently contains only a biological analysis of data. Indeed, it was even proposed that studies of the closure be eliminated altogether, but the GMFMC Shrimp Advisory Panel (which represents the shrimping industry) so vigorously objected that at least a reduced annual study of the closure has been maintained.

In light of the eventual fate of efforts begun in 1986 to conduct a social assessment of the Texas shrimp closure, Dyer's assertion that the Council has moved "toward more intimate involvement of social science in fishery management" is somewhat puzzling. In closing we note the irony in Dyer's claim that the creation of a "Socioeconomic Assessment Panel by the Gulf of Mexico Fishery Management Council is a positive step." We would caution that such a panel could be a step backwards, one that marginalizes social science away from the "real science" business of the *Standing* Scientific and Statistical Committee. As Paredes noted in his original 1985 article, he began his association with the Council in 1978 as a member of a former "special Socio-Economic Committee," but was one of those who "graduated," so to speak, to the Standing Scientific and Statistical Committee when the old socio-economic committee was disbanded in 1979.

We look forward to Dyer (or someone else) unravelling the seeming contradictions and paradoxes in the next installment of this tale of committee work as applied anthropology in fishery management.

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